

Read this manual carefully and learn to operate and service your rear PTO before using it.

To keep the warranty, the rear PTO must be maintained and operated as directed in this manual.

All references to "left-side", "right-side", "front", and "back" are given from the operator's position.

REAR PTO OPERATORS MANUAL



Look for this symbol in places that indicate important safety precautions. To watch for ATTENTION, BECOME ALERT, YOUR SAFETY IS INVOLVED.

Instructions NOTE

Read this manual carefully and learn to operate and service your rear PTO before using it.

To keep the warranty, the rear PTO must be maintained and operated as directed in this manual.

All references to "left-side", "right-side", "front", and "back" are given from the operator's position.

Use the serial number to ensure prompt and correct service when ordering part, requesting service, or making inquiries.

REAR PTO SERIAL NUMBER _____



Look for this symbol to point out important safety precautions. It means -- ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED.

8. Put the PTO in the "OFF" position when the tiller is not in use or is being transported.

9. Disengage power to the tiller and STOP the engine before clearing the unit.

10. After striking a **CONTENTS** object, STOP the engine, put the PTO in the "OFF" position, and lower tiller before inspecting for damage. Any damage must be repaired before restarting the equipment.

11. Never leave the equipment running when unattended--
1. INSTRUCTIONS FOR SAFE OPERATION
always keep the PTO in the "OFF" position and lower tiller before leaving the machine.

12. Do not use the equipment in the dark without adequate lighting.
2. INSTALLATION

13. Maintain the tiller and rear PTO in good condition. Keep the equipment as directed in the tractor, tiller, and **3. MAINTENANCE** operator's manuals.

14. Follow instructions listed on decals.

4. STORAGE

1.2 Operation:

5. ILLUSTRATED PARTS AND PARTS LIST

6. WARRANTY

When you begin, keep tiller raised in transport position and throttle at full throttle.

Always till slowly over rough ground and on hillsides. Till at speeds slow enough to insure your safety. Be alert for holes, ditches, and other irregularities that may cause the tractor to overturn.



SECTION 1

Instructions for Safe Operation

Improper use of this rear PTO can injure people and damage the equipment. People using or servicing this rear PTO must read and follow the instructions in this manual.

It is important to understand that this manual and any other Gravelly instruction manuals do not cover every possible danger. It is impossible for Gravelly to know all possible dangers in operating and servicing the equipment.

The purchaser must give these instructions to the people operating and maintaining this rear PTO. These people must use eye and foot protection.

1.1 Preparations:

1. Read the Gravelly tractor and tiller operator's manuals. Be familiar with all controls and follow the safety precautions outlined in these manuals. Know how to STOP the tractor and tiller quickly in an emergency.
2. Inspect and clear the work area (prior to tilling) of rocks, glass, metal, bones, and any other foreign objects that might be picked up and thrown or tangled in the tiller. Stay alert for holes and other hidden hazards.
3. Do not wear loose fitting clothing or accessories that might get caught in moving parts or on the controls. Keep hands, feet, hair, clothing, etc., away from moving parts.
4. Keep bystanders and pets removed from the work area, and a safe distance away.
5. Do not allow children to operate the equipment, nor allow adults to operate it without their having knowledge of safe operating practices.
6. Operate the tiller from the operator's position on the seat of the Gravelly.
7. Keep safety devices, interlocks, and shields in place at all times.

8. Put the PTO in the "OFF" position when the tiller is not in use or is being transported.
9. Disengage power to the tiller and STOP the engine before clearing the unit.
10. After striking a foreign object, STOP the engine, put the PTO in the "OFF" position, and lower tiller before inspecting for damage. Any damage must be repaired before restarting the equipment.
11. Never leave the equipment running when unattended-- always STOP engine and put the PTO in the "OFF" position and lower tiller before leaving the machine.
12. Do not use the equipment in the dark without adequate lighting.
13. Maintain the tiller and rear PTO in good condition. Keep the equipment as directed in the tractor, tiller, and rear PTO operator's manuals.
14. Follow instructions listed on decals.

1.2 Operation:

1. Read the tractor and tiller operator's manuals for safely engaging and disengaging the tiller. Know how to STOP the tiller quickly in an emergency. Raise tiller before starting engine.
2. Use caution when transporting tiller. Be careful when crossing dips in terrain to avoid dragging tiller. Keep PTO in "OFF" position. Use suggested weight accessories to increase steering control.
3. Observe ground to be cultivated. Plan a route (for seedbed preparation).
4. To begin, keep tiller raised in transport position. Run engine at full throttle.
5. Select the tractor's lowest ground speed and engage forward motion, then lower tiller.
6. Always till slowly over rough ground and on hillsides. Till at speeds slow enough to insure your safety. Be alert for holes, ditches, and other irregularities that may cause the tractor to overturn.

7. When tilling loose ground (well established loamy garden soil), increase ground speed to cover more ground in less time and still do a good job.
8. Do not back up with tiller down. Raise tiller to transport position before backing up or turning sharply.
9. Do not stop or start suddenly when going up or downhill.
10. Avoid steep hillside operation which could cause the tractor to overturn. Reduce speed when turning so there is no danger of the tractor overturning.
11. Always look behind you when backing up.

Remove the axle key and the bolt attaching the test hitch to the axle bearing retainer.

Remove the 4 bolts holding the axle bearing retainer and slide from the axle.

Check the shoulder on the axle behind the keyway for straightness. Use a file to level this shoulder so it will not cut the seal in the new axle bearing retainer.

Clean all gasket residue from the end of the axle housing.



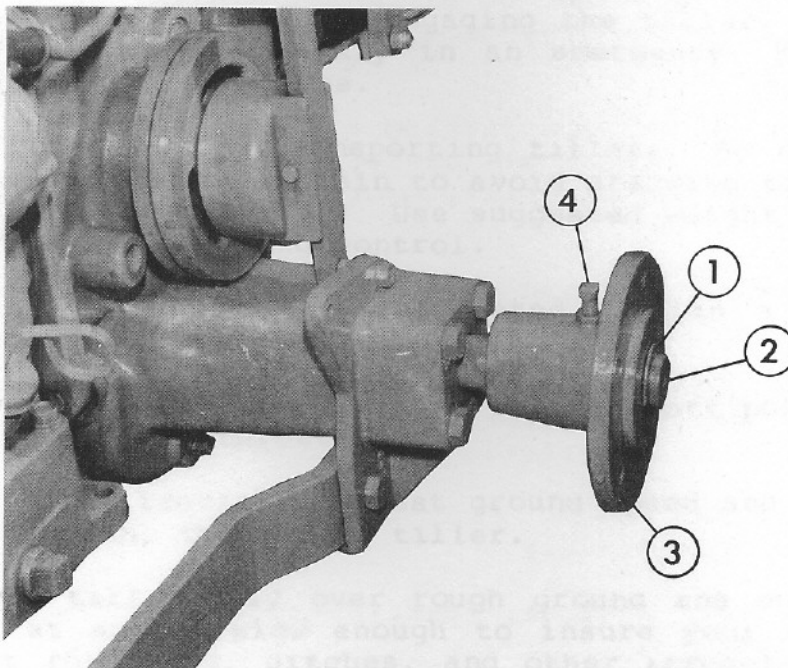
- 1 - Bearing retainer
- 2 - Axle
- 3 - Wheel Hub
- 4 - Set screw

FIGURE 1

Installation

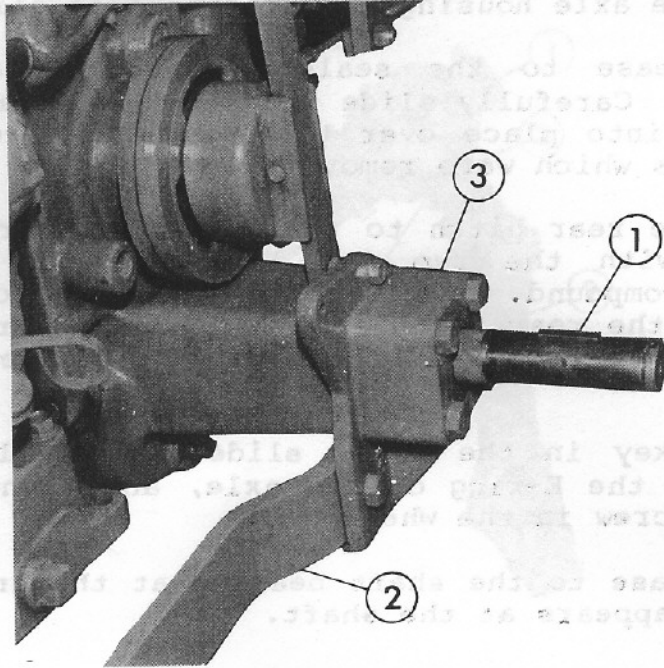
2.1 Axle Bearing Retainer Assembly:

1. Clean the transmission drain plug and adjacent area.
2. Drain transmission oil into a clean container.
3. Raise and block the right drive wheel. Remove the tire-wheel assembly. See Figure 1.
4. Remove the E-ring on the axle. Loosen the wheel hub set screw and remove the wheel hub with a puller. See Figure 2.
5. Remove the axle key and the bolts attaching the rear hitch to the axle bearing retainer.
6. Remove the 4 bolts holding the axle bearing retainer and slide from the axle.
7. Check the shoulder on the axle behind the keyway for sharpness. Use a file to bevel this shoulder so it will not cut the seal in the new axle bearing retainer.
8. Clean all gasket residue from the end of the axle housing.



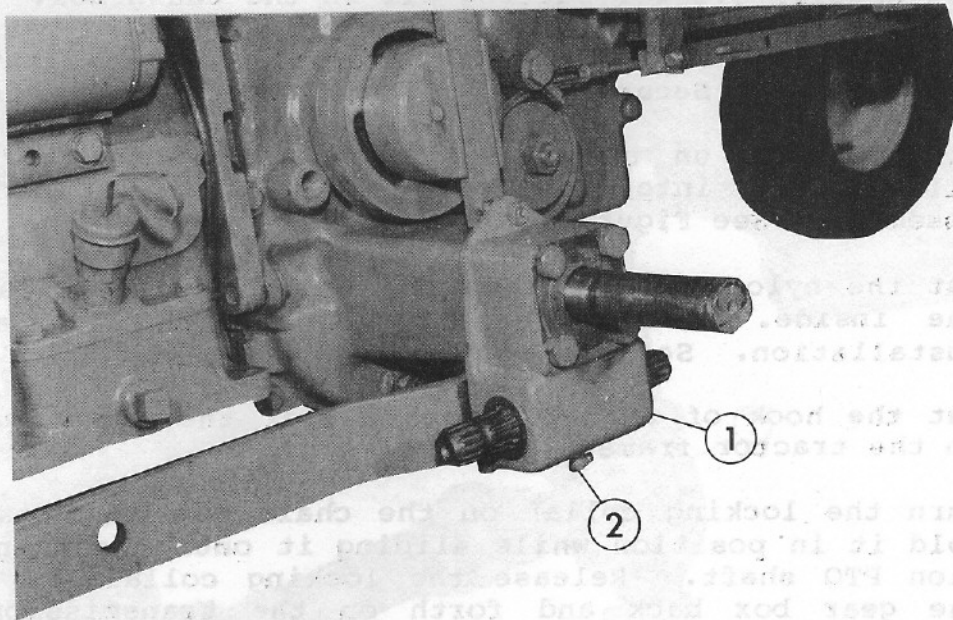
- 1 - E-Ring
- 2 - Axle
- 3 - Wheel Hub
- 4 - Set Screw

FIGURE 1



- 1 - Axle Key
- 2 - Rear Hitch
- 3 - Axle Bearing Retainer

FIGURE 2



- 1 - Axle Bearing Retainer Assembly
- 2 - Grease Fitting

FIGURE 3

9. Wipe the axle clean and apply a film of grease. Wipe a film of grease on the axle gasket and stick it on the end of the axle housing with the 4 holes aligned.
10. Apply grease to the seals in the new axle bearing retainer. Carefully slide the new axle bearing retainer assembly into place over the axle and secure with the 1/2" bolts which were removed.
11. Fasten the rear hitch to the new axle bearing retainer casting with the two new 1/2"x1" bolts coated with locking compound. It may be necessary to loosen the bolts in the rear hitch arm that hold the rear hitch to align the new bolts in the axle bearing retainer. See Figure 3.
12. Put the key in the axle, slide the wheel hub on the axle, put the E-ring on the axle, and tighten and lock the set screw in the wheel hub.
13. Apply grease to the shaft bearing at the grease fitting until it appears at the shaft.
14. Replace the tire-wheel assembly.
15. Put oil in the transmission. Use the drained oil only if it is clean.

2.2 Chain Box Assembly and Installation:

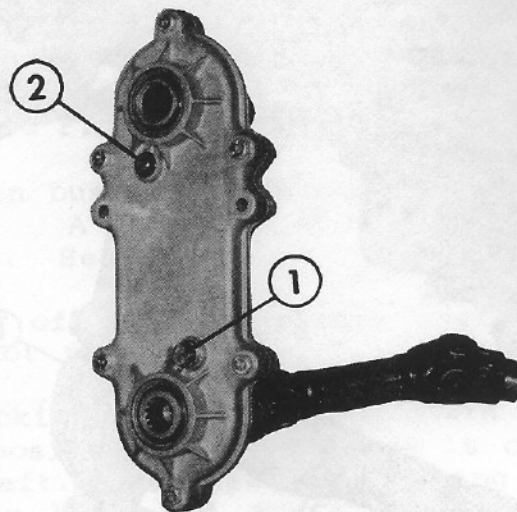
1. See Section 3.2 for putting oil in the chain box.
2. Slide the shaft into the universal yoke so that the holes align. Secure with a 1/4"x2" bolt and nut.
3. Slide spacer on the other end of the shaft and then slide shaft into the rear side of the chain box assembly. See Figure 4.
4. Put the nylon bushing into the tractor frame hole from the inside. A chamfer on the bushing will assist installation. See Figure 5.
5. Put the hook of the PTO bracket over the nylon bushing in the tractor frame.
6. Turn the locking collar on the chain box clockwise and hold it in position while sliding it onto the transmission PTO shaft. Release the locking collar and slide the gear box back and forth on the transmission PTO shaft until it locks in place. Putting the PTO in the "ON" position (engine off) will assist. Be sure to reposition the PTO control in the "OFF" position.
7. Put the rear end of the universal drive shaft onto the the shaft in the axle bearing retainer as the chain box is rotated up into operating position.

8. Attach the chain box to the rear PTO bracket with the clevis pin and hair pin cotter. See Figure 5.
9. Reverse the procedure to remove the chain box and rear PTO bracket.

SECTION 3

Maintenance

- 3.1 Apply grease to the shaft bearings in the axle bearing retainer after every 8 hours of use. Apply multi-purpose grease to the grease fitting until it comes out around the shaft.
- 3.2 Check the oil level in the chain box after every 40 hours of use. Hold the gear box in a vertical position. Remove the lower plug (see Figure 6). Fill with SAE30W-40 oil until it is level with the hole. Replace the plug.



- 1 - Pipe Plug
- 2 - Vent Plug

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FIGURE 6

SECTION 4

Storage

- 4.1 Remove rear PTO chain box assembly with drive shaft and rear PTO bracket from the tractor.
- 4.2 Clean and put a film of grease on the rear universal yoke splines and the PTO shaft splines at the locking collar. Oil the locking collar and pins.
- 4.3 Store in a dry place positioned so that oil does not run out of the vented plug at the top of the chain box.

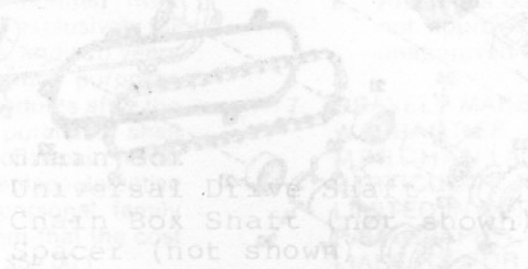
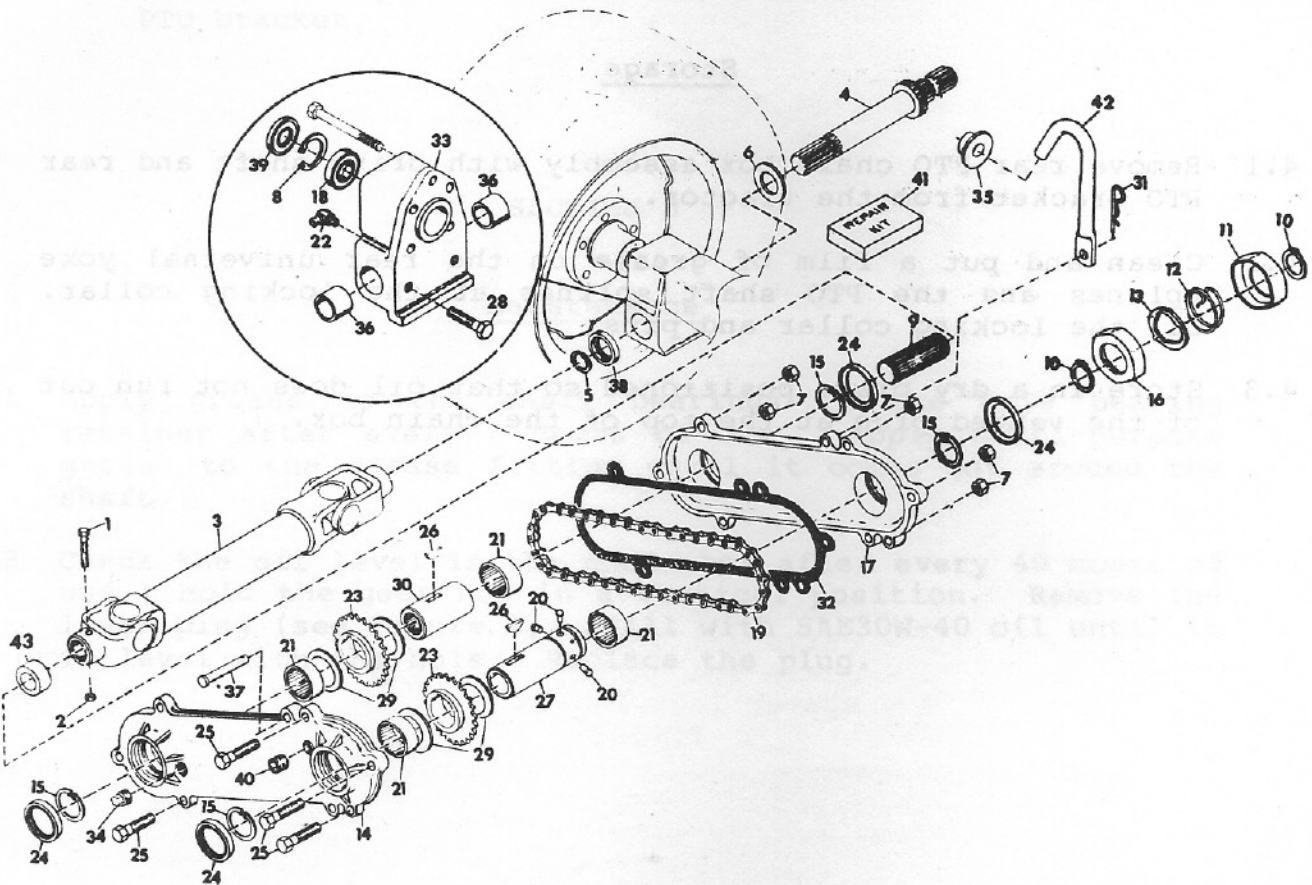


FIGURE 4

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
1	Bolt, Hex 1/4-20 x 1 1/2	1	Bolt, Hex 1/4-20 x 1 1/2
2	Lock Washer 1/4-20	2	Lock Washer 1/4-20
3	Universal Drive Shaft	3	Universal Drive Shaft
4	Drive Shaft	4	Drive Shaft
5	Ring Retainer	5	Ring Retainer
6	Lock Washer 1/4-20	6	Lock Washer 1/4-20
7	Ring Retainer	7	Ring Retainer
8	Lock Washer 1/4-20	8	Lock Washer 1/4-20
9	Ring Retainer	9	Ring Retainer
10	Ring Retainer	10	Ring Retainer
11	Retainer, Outer	11	Retainer, Outer
12	Retainer, Inner	12	Retainer, Inner
13	Lock Washer 1/4-20	13	Lock Washer 1/4-20
14	Washer, Front	14	Washer, Front
15	Ring Retainer	15	Ring Retainer
16	Retainer, Inner	16	Retainer, Inner
17	Washer, Front	17	Washer, Front
18	Retainer, Outer	18	Retainer, Outer
19	Washer, Front	19	Washer, Front
20	Pin	20	Pin
21	Bearing, Needle	21	Bearing, Needle
22	Grease Fitting	22	Grease Fitting
23	Spacer, 1.000x1.375x.450	23	Spacer, 1.000x1.375x.450
24	Bracket, Rear PTO	24	Bracket, Rear PTO
25	Substitute for Tractor	25	Substitute for Tractor
26	Serial No. below 540273	26	Serial No. below 540273
27	Spacer, 1.000x1.375x.450	27	Spacer, 1.000x1.375x.450

SECTION 5

Illustrated Parts and Parts List

ITEM NO.	PART NO.	QTY.	DESCRIPTION	ITEM NO.	PART NO.	QTY.	DESCRIPTION
1	180044	1	Bolt, Hex 1/4-20 x 2	25	180130	6	Bolt, Hex 3/8-16 x 2
2	419454	1	Nut, Lock 1/4-20	26	431787	2	Key, Woodruff 3/16 x 5/8
3	18971	1	Universal Drive Shaft	27	18952	1	Shaft
4	18978	1	Shaft	28	180173	2	Bolt, Hex 1/2-13 x 1
5	14987	1	Ring, Retaining	29	18954	4	Thrust Race
6	17959	1	Thrust Race	30	18956	1	Shaft
7	456004	6	Nut, Lock 3/8-16	31	11860	1	Hair Pin Cotter
8	18812	1	Ring, Retaining	32	18958	1	Gasket
9	18972	1	Shaft	33	34831	1	Axle Bearing Retainer & Bushings
10	18962	2	Ring, Retaining	34	103880	1	Plug, Pipe 1/2 in.
11	18967	1	Retainer, Outer	35	10174	1	Bushing, Nylon
12	18965	1	Spring	36	18977	2	Bearing
13	18966	1	Cam	37	411602	1	Pin, Clevis 3/8 x 1.875
14	18949	1	Housing, Front	38	19537	1	Thrust Race
15	18960	4	Ring, Retaining	39	18031	1	Seal, Oil
16	18963	1	Retainer, Inner	40	18968	1	Plug, Vented
17	18948	1	Housing, Rear	41	20573		Repair Kit for Universal Shaft
18	18029	1	Bearing, Ball	42	35151	1	Bracket, Rear PTO
19	18957	1	Chain		20821	1	Substitute for Tractor Serial No. below 540273
20	18964	3	Pin	43	17924	1	Spacer, 1.060x1.375x.450
21	18950	4	Bearing, Needle				
22	411032	1	Grease Fitting				
23	18953	2	Sprocket				
24	18961	4	Seal, Oil				

LIMITED FIVE-YEAR WARRANTY

1. This Limited Five-Year Warranty is issued by Gravely International, Inc., only to the original purchaser. If Gravely equipment is leased by Gravely, this Warranty shall extend also to the original lessee as if such lessee were the original purchaser.
2. Gravely warrants that all new equipment manufactured by Gravely ("Gravely Products") shall be free of defects in material and workmanship for the term described in paragraph 4, below. Except as hereinafter provided, this Warranty does not cover any engine, tires or battery forming a part of the Gravely Product. Engine and tires are covered by and subject to separate warranties of the manufacturers thereof.
3. In the event that any Gravely Product warranted hereunder shall be defective or fail to conform with this Warranty, Gravely shall, subject to the provisions hereof, pay for, or provide labor and materials for, the repair or replacement of such defective Gravely Product.
4. This Warranty is for five years (60 months) from purchase date for Gravely Products used exclusively for personal, family or household purposes, and two years (24 months) for products used for other purposes (commercial use). Repair of Gravely Products after the second year (24 months from date of purchase) shall be subject to a \$50.00 deductible for each repair. (After two years, Gravely agrees to repair or replace defective Gravely Products used exclusively for personal, family or household purposes only to the extent that the cost of such repair or replacement exceeds \$50.00.)

Batteries are warranted by Gravely for a period of twelve (12) months only. If a battery shall fail within twelve (12) months of purchase, the replacement cost thereof shall be prorated over a twelve-month term based upon the number of months since purchase.

5. To obtain Warranty Service on a Gravely Product (including any battery or other component not manufactured by Gravely), use this procedure:
 - a. Notify the Gravely dealer from whom you purchased the equipment.
 - b. If you have moved and it is not convenient to notify the selling dealer, notify the nearest Gravely dealer. You should supply this dealer with a copy of the bill of sale as proof of the date of purchase.
 - c. Make arrangements to have the equipment delivered to the dealer (refer to paragraph 6 a., below).
 - d. If you have any questions concerning the Gravely Limited Warranty, they should be referred to:

Gravely International, Inc.
One Gravely Lane
Clemmons, NC 27012
Attn: Customer Service Department
 - e. Warranty service on Gravely Products must be performed by an authorized Gravely dealer.
6. This Warranty does not cover the following:
 - a. Transportation to the Gravely dealership. (If the Gravely dealer provides transportation, he will charge for such service.)
 - b. Normal maintenance services and normal replacement of items such as spark plugs, belts, oil, oil filters, air filters, and mower, plow or cultivator blades, gauge wheels, skids and other wear items.
 - c. Any Gravely Product which has been altered or modified in any way.
 - d. Any repair or replacement occasioned by customer neglect or lack of proper maintenance. (The purchaser is responsible for making sure that Gravely Products are operated and serviced as directed in the applicable manual or service instruction. Incorrect use or maintenance will void this Warranty.)
 - e. Any repair occasioned by the use of any attachment not approved by Gravely. (The use of any such unapproved attachment will void this Warranty.)
7. GRAVELY MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES, OR WARRANTIES AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ALL WARRANTIES ARE LIMITED IN DURATION TO THE TERMS SET OUT IN PARAGRAPH 4, ABOVE. GRAVELY SHALL HAVE NO LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE BREACH OF ANY WARRANTY, INCLUDING, BUT NOT LIMITED TO, LIABILITY FOR INCONVENIENCE, RENTAL OR PURCHASE OF REPLACEMENT EQUIPMENT, OR FOR LOSS OF PROFITS OR OTHER COMMERCIAL LOSS.
8. Some states do not allow limitations on how long an implied warranty lasts, so the above statement may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.
9. This Warranty gives you specific legal rights, and you may have other rights which vary from state to state.
10. A Gravely product registration card is supplied with each Gravely Product. Please complete the card and return it to Gravely at the address listed on the card. The equipment registration card will be used by Gravely for:
 - a. Recording date of purchase.
 - b. Notification of owners in compliance with the Consumer Product Safety Act, should any notification be necessary.The return of such card is necessary for your warranty to be effective.
11. This Warranty is not subject to change or modification by anyone, including Gravely dealers and no Gravely dealer is authorized to make any representations or promises on Gravely's behalf.



One Gravely Lane, Clemmons, NC 27012